

CLAIM AMENDMENTS

FI 1. (Previously Presented) A cylinder lock and key combination comprising:

- a lock body,
- a turnable lock cylinder located inside the lock body and having an axial slot,
- a set of code locking discs located inside the lock cylinder, each locking disc having at least one peripheral notch and a key opening and being turnable in the lock body in a first turning direction about a turning axis by application of turning force to a counter surface bounding the key opening, each locking disc having an initial position, such that when all the locking discs are in their respective initial positions the key openings form a key passage, and an opening position in which its peripheral notch is at the position of the axial slot in the lock cylinder, such that when all the locking discs are in their respective opening positions the peripheral notches form a uniform channel at the position of the axial slot, the key openings of at least first and second code locking discs each being bounded by at least first and second discrete counter surfaces such that the first code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the first code locking disc and the second code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the second code locking disc,

- a locking bar having a locking position in which it prevents turning of the cylinder relative to the lock body and a releasing position in which it is received in the channel formed by the peripheral notches of the locking discs and releases the cylinder for turning relative to the lock body, and

- a key insertable in the lock when the locking discs are at the initial position, the key having a set of combination surfaces corresponding respectively to the locking discs, for engaging a counter surface of each locking disc and applying turning force thereto when the key is inserted in the lock and is turned in the first turning direction, so that the locking discs are turned in the first turning direction to their respective opening positions,

F1 and wherein the combination surface corresponding to said first code locking disc is provided with a first of at least two combination values and the combination surface corresponding to said second code locking disc is provided with a second of said at least two combination values, and the first and second combination values are such that upon inserting the key in the key passage and turning the key through a first turning angle in the first turning direction, the combination surface corresponding to the first code locking disc engages the first counter surface bounding the key opening of the first code locking disc and the combination surface corresponding to the second code locking disc clears the first counter surface bounding the key opening of the second code locking disc, and upon turning of the key in the first turning direction through a further turning angle the combination surface corresponding to the second code locking disc engages the second counter surface bounding the key opening of the second code locking disc.

2. (Previously Presented) A cylinder lock and key combination according to claim 1, wherein the key opening of said first locking disc has first and second discrete counter surfaces for engagement selectively by the combination surface corresponding to said first locking disc for turning said first locking disc in the first turning direction, and the first and second discrete counter surfaces are arranged at a distance from each other and are located at different respective angles with regard to a central axis (D) of the key opening of said first locking disc.

3. (Previously Presented) A cylinder lock and key combination according to claim 2, wherein the first and second discrete counter surfaces are inclined at an angle of about 30°.

4. (Previously Presented) A cylinder lock and key combination according to claim 1, wherein the second counter surface bounding the key opening of the first code locking disc extends substantially to the central normal (E) of the central axis (D) of the key opening.

5. (Previously Presented) A cylinder lock and key combination according to claim 1, wherein the key openings of the code locking

F1 discs are substantially identical and are formed so that the combination surfaces of the key engage the respective counter surfaces of the corresponding locking discs only after the key has been turned through a selected angle from the initial insertion position of the key.

6. (Previously Presented) A cylinder lock and key combination according to claim 5, wherein said selected angle is about 15°.

7. (Original) A cylinder lock and key combination according claim 1, further comprising at least one lifting 0-locking disc having a key opening smaller than the key openings of the code locking discs.

8. (Original) A cylinder lock and key combination according claim 1, wherein the lock is operable in only one turning direction and the key opening of said one locking disc is bounded by a return surface which cooperates with the key to return said one locking disc to a locking position when the key is turned in a second turning direction, opposite said first turning direction, the return surface being opposite to the counter surfaces with regard to the central axis of said one locking disc.

9. (Previously Presented) A cylinder lock and key combination according to claim 8, wherein said return surface is aligned with one of the counter surfaces of said first locking disc.

10. (Previously Presented) A cylinder lock and key combination according to claim 1, wherein the lock is operable in two turning directions and each locking disc is turnable in a second turning direction, opposite the first turning direction, by application of turning force to a counter surface bounding the key opening, the key has a second set of combination surfaces for engaging a counter surface of each locking disc when the key is turned in the second turning direction, the key opening of said first locking disc is bounded by third and fourth discrete counter surfaces for engagement selectively by a combination surface of the second set, and the combination surface of the second set corresponding to said first

F1 locking disc is provided selectively with one of at least two combination values.

11. (Original) A cylinder lock and key combination according to claim 10, wherein said first locking disc has fifth and sixth counter surfaces and seventh and eighth counter surfaces, the counter surfaces serving for the same turning direction being located in pairs diametrically on either side of the turning axis (D') of said first locking disc.

12. (Currently Amended) A key blank of a key for operating a disc cylinder lock comprising:

a lock body,

a turnable lock cylinder located inside the lock body and having an axial slot,

a set of code locking discs located inside the lock cylinder, each locking disc having at least one peripheral notch and a key opening and being turnable in the lock body in a first turning direction about a turning axis by application of turning force to a counter surface bounding the key opening, each locking disc having an initial position, such that when all the locking discs are in their respective initial positions the key openings form a key passage, and an opening position in which its peripheral notch is at the position of the axial slot in the lock cylinder, such that when all the locking discs are in their respective opening positions the peripheral notches form a uniform channel at the position of the axial slot, the key openings of at least first and second code locking discs each being bounded by at least first and second discrete counter surfaces such that the first code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the first code locking disc and the second code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the second code locking disc, and

a locking bar having a locking position in which it prevents turning of the cylinder relative to the lock body and a releasing

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position in which it is received in the channel formed by the peripheral notches of the locking discs and releases the cylinder for turning relative to the lock body,

wherein the key blank has rotational symmetry of order 2 and includes an elongate shank having a longitudinal axis and the basic form of the shank of the key blank in the perpendicular cross-sectional plane of the shank, exclusive of any possible profile grooves or corresponding grooves extending longitudinally of the shank of the key blank, is substantially symmetrical with respect to a plane containing said longitudinal axis and is substantially rectangular except for at least one bevel surface for providing at least one combination surface at least one corner bevel surfaces for providing rectangular cross-sectional form, said bevel surfaces being inclined to the plane of symmetry of the shank and comprising a first bevel surface at a first corner of the substantially rectangular cross-sectional form for providing combination surfaces for engaging counter surfaces of the locking discs for turning the locking discs in said first turning direction and a second bevel surface at a second corner of the substantially rectangular cross-sectional form for providing combination surfaces for engaging counter surfaces of the locking discs for turning the locking discs in a second turning direction, opposite said first turning direction.

13. (Cancelled)

14. (Currently Amended) A key blank according to claim 12, wherein the rectangular cross section of the shank has a longer side and a shorter side and the shank has a central cross-sectional plane parallel to the longer side of the rectangular cross section and said bevel surface is inclined to said central cross-sectional plane at an angle of 20°-30°, ~~preferably an angle of about 25°.~~

15. (Original) A key blank according to claim 12, wherein said bevel surface is divided into two parts extending mutually in different directions and each of which forms one combination surface.

F1 16. (Currently Amended) A key blank according to claim 12, wherein said bevel surface is divided into two at least substantially parallel parts separated from each other by a step ~~or the like~~ and each forming one combination surface.

17. (Original) A key blank according to claim 12, wherein the shank of the key blank is symmetrical with regard to the central axis of the shank.

18. (Original) A key blank according to claim 12, wherein the rectangular cross section of the shank has a longer side and a shorter side, the shank has a central axis (B) parallel to the longer side of the rectangular cross section, and the shank of the key blank is symmetrical with regard to both the central axis (B) and its central normal (C).

19. (Original) A key blank according to claim 12, wherein when the key blank is intended for a lock operable only in one turning direction the bevel surface of every second corner of the shank is arranged to operate as a return surface for the locking discs.

20. (Currently Amended) A key for operating a disc cylinder lock comprising:

- a lock body,
- a turnable lock cylinder located inside the lock body and having an axial slot,
- a set of code locking discs located inside the lock cylinder, each locking disc having at least one peripheral notch and a key opening and being turnable in the lock body in a first turning direction about a turning axis by application of turning force to a counter surface bounding the key opening, each locking disc having an initial position, such that when all the locking discs are in their respective initial positions the key openings form a key passage, and an opening position in which its peripheral notch is at the position of the axial slot in the lock cylinder, such that when all the locking discs are in their respective opening positions the peripheral notches form a uniform channel at the position of the axial slot, the key

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openings of at least first and second code locking discs each being bounded by at least first and second discrete counter surfaces such that the first code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the first code locking disc and the second code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the second code locking disc, and

a locking bar having a locking position in which it prevents turning of the cylinder relative to the lock body and a releasing position in which it is received in the channel formed by the peripheral notches of the locking discs and releases the cylinder for turning relative to the lock body,

the key ~~having~~ including an elongate shank ~~of which~~ having a longitudinal axis and the basic form of the shank in the perpendicular cross-sectional plane of the shank, exclusive of any possible profile grooves or corresponding grooves extending longitudinally of the shank of the key, is substantially rectangular except for at least one bevel surface for providing combination surfaces corresponding to the code locking discs, said one bevel surface being inclined at an acute angle to a plane containing the longitudinal axis of the key shank and a central axis of the rectangular cross-sectional form of the key shank and said one bevel surface providing at least first and second combination surfaces corresponding to the first and second code locking discs respectively and having said first and second combination values respectively, and wherein the first combination surface differs from the second combination surface with respect to the combination of the angle of the cut and the length of the cut in said one bevel surface.

21. (Cancelled)

22. (Original) A key according to claim 20, wherein the angular pitch between cuts corresponding to successive combination values is about 15°.

F 23. (Original) A key according to claim 20, wherein the length of the cut surfaces corresponding to different combination values is determined so that the extreme ends thereof are located at most on three different peripheral surfaces measured from the central axis (A) of the shank of the key.

24. (Original) A key according to claim 23, wherein the extreme ends of the cut surfaces providing for turning movement for the locking discs and corresponding to different combination values are located on two different peripheral surfaces measured from the central axis (A) of the shank of the key.

25. (Original) A key according to claim 23, wherein the combination surfaces of the key extending to the same peripheral surface are located mutually with equal pitch.

26. (Original) A key according to claim 20, wherein the combination cuts diametrically opposite each other with regard to the central axis (A) of the shank of the key are symmetrical.

27. (Original) A key according to claim 20, wherein the key has four cut surfaces for each code locking disc and the combination cuts located diametrically opposite each other with regard to the central axis (A) of the shank of the key are identical.

28-29 (Cancelled)

30. (Previously Presented) A cylinder lock and key combination according to claim 1, wherein said two discrete counter surfaces bounding the key opening of the first code locking disc are within a common quadrant of the first code locking disc.

31. (Previously Presented) A cylinder lock and key combination comprising:  
a lock body,  
a turnable lock cylinder located inside the lock body and having an axial slot,



F1 a set of code locking discs located inside the lock cylinder, each locking disc having at least one peripheral notch and a key opening and being turnable in the lock body in a first turning direction by application of turning force to a counter surface bounding the key opening, each locking disc being at an initial position and being turnable in the first direction to an opening position in which its peripheral notch is at the position of the axial slot in the lock cylinder, such that when all the locking discs are in their respective opening positions the peripheral notches form a uniform channel at the position of the axial slot, the key openings of at least first and second code locking discs each being bounded by at least first and second discrete counter surfaces such that the first code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the first code locking disc and the second code locking disc can be turned in said first turning direction by application of turning force to any one of said discrete counter surfaces of the second code locking disc,

a locking bar having a locking position in which it prevents turning of the cylinder relative to the lock body and a releasing position in which it is received in the channel formed by the peripheral notches of the locking discs and releases the cylinder for turning relative to the lock body, and

a key in the lock, the key having a set of combination surfaces corresponding respectively to the locking discs, for engaging a counter surface of each locking disc and applying turning force thereto when the key is turned in the first turning direction,

and wherein the combination surface corresponding to said first code locking disc is provided with a first of at least two combination values and the combination surface corresponding to said second code locking disc is provided with a second of said at least two combination values, and the first and second combination values are such that upon turning the key through a first turning angle in the first turning direction, the combination surface corresponding to the first code locking disc engages the first counter surface bounding the key opening of the first code locking disc and the combination surface corresponding to the second code locking disc clears the first counter surface bounding the key opening of the second code locking disc, and

F1 upon turning of the key in the first turning direction through a further turning angle the combination surface corresponding to the second code locking disc engages the second counter surface bounding the key opening of the second code locking disc.

32. (New) A key according to claim 20, wherein the basic form of the shank in the perpendicular cross-sectional plane of the shank, exclusive of any possible profile grooves or corresponding grooves extending longitudinally of the shank of the key, is substantially rectangular except for at least two bevel surfaces for providing combination surfaces corresponding to the code locking discs, said bevel surfaces comprising said one bevel surface, for providing combination surfaces for engaging counter surfaces of the locking discs for turning the locking discs in said first turning direction, and a second bevel surface for providing combination surfaces for engaging counter surfaces of the locking discs for turning the locking discs in a second turning direction, opposite said first turning direction.

33. (New) A key according to claim 20, wherein the key shank includes a length segment between the first and second combination surfaces, said length segment of the key shank is substantially symmetrical with respect to a plane containing said longitudinal axis, and said one bevel surface is inclined to said plane.

34. (New) A key according to claim 20, wherein the key shank has rotational symmetry of order 2.

35. (New) A key according to claim 20, for operating a disc cylinder lock in which the set of locking discs includes a third locking disc, and wherein said one bevel surface provides a third combination surface for engaging the third locking disc and the third combination surface has the same length and inclination as said one bevel surface.

36. (New) A cylinder lock and key combination according to claim 1, wherein the key includes an elongate shank having a longitudinal axis and the basic form of the shank in the perpendicular cross-

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sectional plane of the shank, exclusive of any possible profile grooves or corresponding grooves extending longitudinally of the shank of the key, is substantially rectangular except for at least one bevel surface inclined at an acute angle to a plane containing the longitudinal axis of the key shank and a central axis of the rectangular cross-sectional form of the key shank and the set of code locking discs includes a third locking disc between the first and second code locking discs and the combination surface corresponding to the third locking disc has the same length and inclination as said one bevel surface.

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